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EXAMINER

MENON, KRISHNAN S

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**BEFORE THE BOARD OF PATENT APPEALS
AND INTERFERENCES**

Application Number: 10/725,858
Filing Date: December 01, 2003
Appellant(s): GLOECKLE ET AL.

Gerard A. Mesina
For Appellant

EXAMINER'S ANSWER

This is in response to the appeal brief filed 3/3/08 appealing from the Office action mailed 1/31/07.

(1) Real Party in Interest

A statement identifying by name the real party in interest is contained in the brief.

The examiner is not aware of any related appeals, interferences, or judicial proceedings which will directly affect or be directly affected by or have a bearing on the Board's decision in the pending appeal.

(3) Status of Claims

The statement of the status of claims contained in the brief is correct.

(4) Status of Amendments After Final

The appellant's statement of the status of amendments after final rejection contained in the brief is correct.

(5) Summary of Claimed Subject Matter

The summary of claimed subject matter contained in the brief is correct.

(6) Grounds of Rejection to be Reviewed on Appeal

The appellant's statement of the grounds of rejection to be reviewed on appeal is correct.

(7) Claims Appendix

The copy of the appealed claims contained in the Appendix to the brief is correct.

(8) Evidence Relied Upon

5,149,340	WAYCUILIS	9-1992
6,972,093	PARTRIDGE	12-2005
2002/0139111	UEDA	10-2002

(9) Grounds of Rejection

The following ground(s) of rejection are applicable to the appealed claims:

Claim Rejections - 35 USC § 102

1. Claims 1-4 and 6 are rejected under 35 U.S.C. 102(b) as being anticipated by Waycuilis (US 5,149,340).

Waycuilis teaches a method of separating lower boiling hydrocarbons from a hydrocarbon mixture using a membrane, and using a sweep gas – figures, abstract, examples and table 1B. Regarding the pervaporation membrane, the reference teaches that the use of semipermeable membranes is well known for separating hydrocarbons and describes the process of pervaporation (see column 1 lines 25-346); pervaporation membrane is a semipermeable membrane. Permeate has a lower boiling point than the retentate – see Table 1B.

Regarding the limitation, ‘permeate that is aromatics enriched’, the reference teaches the generic process of removing impurities from hydrocarbons, and membranes or membrane modules designed to permit passage of specific impurities normally desired to be removed from hydrocarbons are readily available commercially, which would anticipate this limitation. See column 3 line 55 – column 4 line 15, wherein the reference teaches:

“It should be understood that membranes or membrane modules which are designed to permit passage therethrough of the specific impurities normally desired to be removed from hydrocarbon substances are readily commercially available and need not be newly developed for use in carrying out this invention.”

Applicant identifies aromatics as a 'hardly combustible' impurity (Specification, page 2, lines 15-24). Applicant also discloses page 1 of the specification, at lines 21-25, that the method of separating aromatic hydrocarbons from hydrocarbon mixture is known; and it is separated by pervaporation. Thus, the reference teaches that membranes designed to permit passage of specific impurities is known; applicant discloses that removing aromatics from hydrocarbons are known. The device disclosed by the applicant for the purpose of separating aromatics from fuel is also the same as what is taught by the reference – compare applicant's figure 1 (schematic) with that of the reference. The membrane used in the reference is a hollow fiber membrane, or flat sheet as spiral wound or stacked; applicant also discloses flat sheet or hollow fiber membranes.

Therefore, under the principles of inherency, if a prior art device, in its normal and usual operation, would necessarily perform the method claimed, then the method claimed will be considered to be anticipated by the prior art device. When the prior art device is the same as a device described in the specification for carrying out the claimed method, it can be assumed the device will inherently perform the claimed process. In re King, 801 F.2d 1324, 231 USPQ 136 (Fed. Cir. 1986). The apparatus of the reference is inherently capable of performing the separation claimed.

Fuel supplied for operating a motor vehicle or turbine would be an intended use of the product made by the process. Closed circuit for scavenging gas (fuel gas) – see figures in the reference.

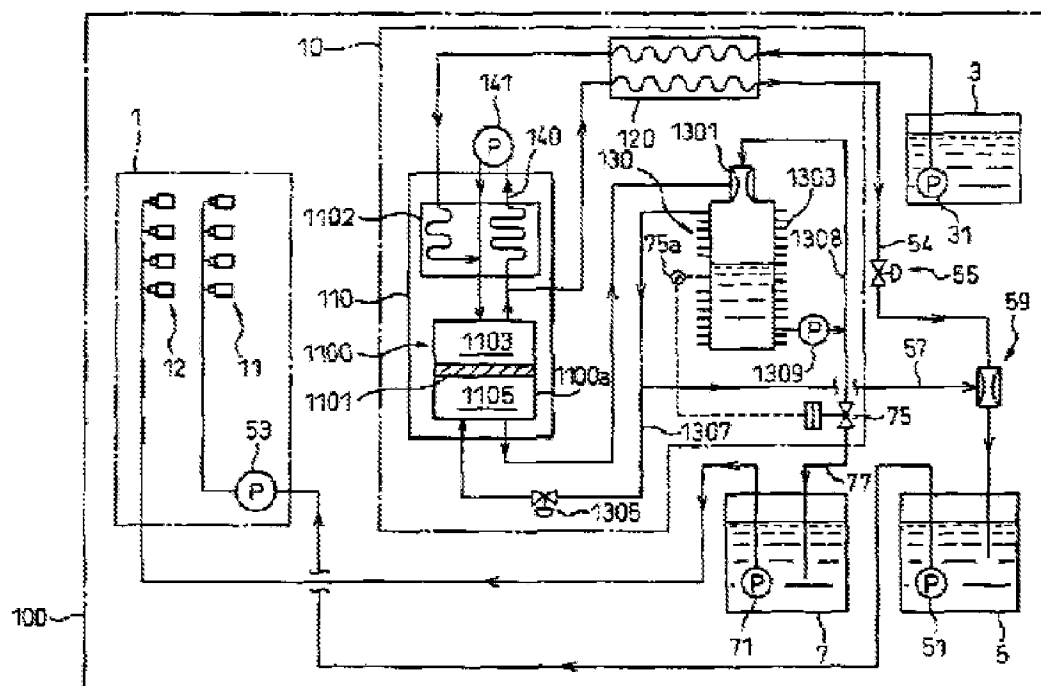
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2. Claims 1-7 are rejected under 35 U.S.C. 102(e) as being anticipated by Partridge et al (US 6,972,093).

This reference teaches all the limitations claimed in the instant claims.

Particularly, with respect to claim 1:

Fig. 1



Partridge, Figure 1 is reproduced above. For the description of the process, see column 3, line 50 – column 4, line 56. Separation device: *aromatic separation* membrane 1101 in housing 1100(a); 1103 is the fuel feed side of the membrane, 1105 is the permeate side of the membrane. Fuel feed to the membrane is heated by heater 1102, and is at a higher pressure than the permeate side, so that aromatics are collected in the vapor phase at the permeate side, which is the description of

'pervaporation'. Particularly, the permeate side is maintained at a pressure below the vapor pressure of the aromatics. The recirculating line 1307 carries the permeated aromatics to the vapor-liquid separator 130, and recirculates the vapor (which would inherently contain air) back to the permeate side. This recirculating vapor would act as a scavenging gas as claimed. See column 5, lines 25-67 and column 8, lines 10-35.

The process uses separating gasoline into higher octane (lower boiling) and lower octane (higher boiling components), and it is supplied to an engine.

Applicant cannot rely upon the foreign priority papers to overcome this rejection because the German application 102 55 778.0 with priority date 11/29/02 does not have sufficient disclosure to support the claim limitations. Particularly, at the least, it does not support the "sweep gas" limitation of claim 1. Partridge has a filing date of January 30, 2003, which is prior to the filing date August 8, 2003, of DE 103 36 759.4.

Claim Rejections - 35 USC § 103

3. Claims 1-7 are rejected under 35 U.S.C. 103(a) as being unpatentable over Ueda et al (US 2002/0139111) in view of Waycuilis.

Ueda teaches a fuel supply apparatus of an internal combustion engine having a membrane that separates octane and the lower boiling components into a permeate stream and the others in to a concentrate stream, and a condenser for accumulating the components in the permeate stream (see figures 1 and 5-9; and paragraphs 24- 49). The membrane used, membrane 101, is selectively permeating to aromatics - see

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paragraphs 29, 30. The teaching of the reference differs from the claims in the use of sweep gas. Waycuilis teaches a similar process with sweep gas, which, Waycuilis teaches, would improve the process, such as more efficiency, improved separation, reduced membrane area, reduced losses, etc. (see column 8 lines 18-29 and column 4 lines 25-61). It would be obvious to one of ordinary skill in the art at the time of invention to use the teaching of Waycuilis in the teaching of Ueda to have the sweep gas to improve the process as well. With respect to the use of air, since the Ueda system is actually mounted in a vehicle, it would be obvious to one of ordinary skill in the art at the time of invention to use air as sweep gas instead of providing a separate gas stream such as fuel gas.

(10) Response to Argument

A. Rejection of Claims 1-4 and 6 under 35 USC 102(b) over Waycuilis:

Applicant's arguments are directed at the reference failing to teach permeate that is aromatics-enriched. This has been clearly shown as inherent in the teaching of the reference by way of a showing that the process and the membrane materials are well known by applicant's own admission, as well as the generic teaching of the reference. The device used by the reference is also identical to the device used for the claimed process; therefore, the apparatus of the ref is capable of the process claimed. Therefore, by the case law "in re King", the process is anticipated by the reference. Even if the process is judged as not anticipated by the reference, it is amply obvious to one of ordinary skill in the art.

B. Rejection of claim 1-7 under 35 USC 102(e) over Partridge:

Applicant's argument traversing this rejection is directed at the claim limitation "acting upon the separation device by a scavenging gas on a permeate side". This entire argument is not commensurate with the scope of the claims, nor with the rejection. First of all, claim 1 does not recite pervaporation. Secondly, claim 1 recites "acting upon the **separation device** by a scavenging gas on a permeate side". Applicant has not defined "separation device" as the separation membrane; in fact applicant has not provided any specific definition for the term "separation device". The normal and customary meaning of the term 'separation device' is an apparatus for separation. The apparatus, or device, of the reference has a scavenging gas acting on it's permeate side. Thirdly, Partridge, at column 4, lines 9-17, teaches keeping the permeate side at a pressure below the vapor pressure of the effused aromatics, and also heats the material fuel supply to the feed side of the membrane. The reference teaches how to control the operating parameters and vapor recirculation in column 5, lines 25-67 and column 8, lines 10-35, to efficiently run the process. Particularly, the specific teaching of keeping the partial pressure of aromatics low in the permeate side at column 8, lines 30-35, describes pervaporation. Pervaporation is a process in which the permeating material permeates through the membrane in the vapor phase due to the partial pressure difference between the feed side and the permeate side. Applicant describes "Pervaporation" as separation by providing 'vacuum pressure' on the permeate side (see specification at page 1, lines 25-27); and heats the fuel feed to

160C (Specification at page 6, lines 3-15). Thus, the reference is teaching what applicant has disclosed. Thus the claims are anticipated by Partridge.

Even though applicant provided copies of the priority documents, applicant has not shown where the priority document DE 102 55 778.0 provides support for the claimed invention, and has not provided any supporting arguments.

C. Rejection of Claims 1-7 under 35 USC 103(a) as unpatentable over the combination of Ueda and Waycuilis:

Argument about “aromatics” – the reference teaches “aroma separation membrane”, which allows permeation of aromatic components (see paragraph 29). Therefore, this argument has no basis.

With respect to the argument that Ueda teaches a process based on fuel separation whereas Waycuilis teaches a process for separation hydrocarbons: it is common knowledge that fuel such as gasoline is a mixture of hydrocarbons. Argument that use of the sweep gas somehow result in the loss of the high and the low pressure sides of the reference, or destroy the vacuum pump are baseless and speculative. For additional evidence, see the Partridge reference above, which teaches sweep gas, high and low pressure sides and vacuum pump (jet pump 1301).

On the other hand there is ample of reasons why one would be motivated to combine the references to arrive at applicant’s claimed invention – Waycuilis teaches several advantages of using the sweep gas for the process; Ueda teaches several

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advantages of using the membrane process such as pervaporation for splitting the fuel supply to an internal combustion engine.

(11) Related Proceeding(s) Appendix

No decision rendered by a court or the Board is identified by the examiner in the Related Appeals and Interferences section of this examiner's answer.

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For the above reasons, it is believed that the rejections should be sustained.

Respectfully submitted,

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3-13-08

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